Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method of sharpness enhancement of an input signal ~~(L(m,n))~~ comprising:

detecting, ~~(HHP; VHP)~~ in a first spatial direction, a first subset of edges in the input signal ~~(L(m,n))~~ to obtain a first detector signal ~~(ZX; ZY)~~,

detecting, ~~(HBP; VBP)~~ in the first spatial direction, a second subset of edges in the input signal ~~(L(m,n))~~ to obtain a second detector signal ~~(DX; DY)~~, ~~said~~ the second subset being different from the first subset,

determining ~~(HE; VE)~~ a peaking factor ~~(CX; CY)~~ by using a predetermined two-dimensional enhancement function ~~(HEF; VEF)~~ allocating values for the peaking ~~(CX; CY)~~ factor to combinations of values of the first detector signal ~~(ZX; ZY)~~ and the second detector signal ~~(DX; DY)~~, and

multiplying ~~(MX; MY)~~ the first detector signal ~~(ZX; ZY)~~ with the peaking factor ~~(CX; CY)~~ to obtain a peaked signal ~~(DEX; DEY)~~.

2. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 1, wherein:

the detecting ~~(HHP; VHP)~~ of the first subset of edges ~~comprises~~ includes high-pass filtering ~~(HHP; VHP)~~ the input image signal ~~(L(m,n))~~ to obtain a high-pass filtered signal ~~(ZX; ZY)~~,

the detecting ~~(HBP; VBP)~~ of the second subset of edges ~~comprises~~ includes band-pass filtering ~~(HBP; VBP)~~ the input image signal ~~(L(m,n))~~ to obtain a band-pass filtered signal ~~(DX; DY)~~,

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY)~~ by using a predetermined two-dimensional enhancement function ~~(HEF; VEF)~~ being adapted for allocating values for the peaking factor ~~(CX; CY)~~ to combinations of values of the high-pass filtered signal ~~(ZX; ZY)~~ and the band-pass filtered signal ~~(DX; DY)~~, and

the multiplying being adapted for multiplying ~~(MX; MY)~~ the high-pass filtered signal ~~(ZX; ZY)~~ with a multiplying factor based on the peaking factor ~~(CX; CY)~~.

3. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 2, wherein:

the high-pass filtering ~~(HHP; VHP) comprises~~ includes horizontal high-pass filtering ~~(HHP)~~ a horizontal component of the input image signal ~~(L(m,n))~~ to obtain a horizontal high-pass filtered signal ~~(ZX)~~,

the band-pass filtering ~~(HBP; VBP) comprises~~ includes horizontal band-pass filtering ~~(HBP)~~ the horizontal component of the input image signal ~~(L(m,n))~~ to obtain a horizontal band-pass filtered signal ~~(DX)~~, and

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY) comprises~~ includes using a predetermined two-dimensional horizontal enhancement function ~~(HEF)~~ for allocating values for a horizontal peaking factor ~~(CX)~~ to combinations of values of the horizontal high-pass filtered signal ~~(ZX)~~ and the horizontal band-pass filtered signal ~~(DX)~~.

4. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 3, wherein: ~~said~~

the horizontal enhancement function ~~(HEF)~~ has a relatively low value if:

(i) a value of the horizontal high-pass filtered signal ~~(ZX)~~ and a value of the horizontal band-pass filtered signal ~~(DX)~~ are substantially equal,

(ii) the value of the horizontal high-pass filtered signal ~~(ZX)~~ is larger than a first predetermined value, or

(iii) the value of the horizontal band-pass filtered signal ~~(DX)~~ is larger than a second predetermined value~~, and wherein, if (i) is not valid, said~~; otherwise,

the horizontal enhancement function ~~(HEF)~~ has a relatively high value if:

(iv) the value of the horizontal high-pass filtered signal ~~(ZX)~~ is smaller than the first predetermined value, or

(v) the value of the horizontal band-pass filtered signal ~~(DX)~~ is smaller than the second predetermined value.

5. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 3, wherein the method ~~further comprises~~ includes:

vertical high-pass filtering ~~(VHP)~~ a vertical component of the input image signal ~~(L(m,n))~~ to obtain a vertical high-pass filtered signal ~~(ZY)~~, and

vertical band-pass filtering ~~(VBP)~~ the vertical component of the input image signal ~~(L(m,n))~~ to obtain a vertical band-pass filtered signal ~~(DY)~~, and

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY) comprises~~ includes using a predetermined two-dimensional vertical enhancement function ~~(VEF)~~ for allocating values for a vertical peaking factor ~~(CY)~~ to combinations of values of the vertical high-pass filtered signal ~~(ZY)~~ and the vertical band-pass filtered signal ~~(DY)~~.

6. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 5, wherein:~~ said~~

the vertical enhancement function~~ (VEF)~~ has a relatively low value if:

(i) a value of the vertical high-pass filtered signal~~ (ZY)~~ and a value of the vertical band-pass filtered signal~~ (DY)~~ are substantially equal,

(ii) the value of the vertical high-pass filtered signal~~ (ZY)~~ is relatively large, or

(iii) the value of the vertical band-pass filtered signal~~ (DY)~~ is relatively large~~, and wherein said~~; otherwise,

the vertical enhancement function~~ (VEF)~~ has a relatively high value if:

(iv) the value of the vertical high-pass filtered signal~~ (ZY)~~ is relatively small~~ and (i) is not valid~~, or

(v) the value of the vertical band-pass filtered signal~~ (DY)~~ is relatively small~~ and (i) is not valid~~.

7. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 5, wherein the multiplying~~ (MX; MY) comprises~~ includes:

multiplying~~ (MX)~~ the horizontal high pass filtered signal~~ (ZX)~~ with the horizontal peaking factor~~ (CX)~~ to obtain a horizontal correction factor~~ (DEX)~~,

multiplying~~ (MY)~~ the vertical high pass filtered signal~~ (ZY)~~ with the vertical peaking factor~~ (CY)~~ to obtain a vertical correction factor~~ (DEY)~~,

summing~~ (SU1)~~ the horizontal correction factor~~ (DEX)~~ and the vertical correction factor~~ (DEY)~~ to obtain a total correction factor~~ (TCF)~~, and

summing~~ (SU2)~~ the total correction factor~~ (TCF)~~ to the input image signal ~~(L(m,n))~~.

8. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 7, wherein the summing ~~(SU1)~~ of the horizontal correction factor ~~(DEX)~~ and the vertical correction factor ~~(DEY) comprises~~ includes weighting ~~(SU1)~~ the horizontal correction factor ~~(DEX)~~ with a horizontal weighting factor ~~(HWF)~~, and the vertical correction factor ~~(DEY)~~ with a vertical weighting factor ~~(VWF)~~, wherein the horizontal weighting factor ~~(HWF)~~ has a lower value when the vertical correction factor ~~(DEY)~~ surpasses a first threshold ~~(THY)~~, and wherein the vertical weighting factor ~~(VWF)~~ has a lower value when the horizontal correction factor ~~(DEX)~~ surpasses a second threshold ~~(THX)~~.

9. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 7, wherein the method ~~further comprises~~ includes determining ~~(NLD)~~ a level of noise being present in the input image signal ~~(L(m,n))~~, and modifying ~~(MPF)~~ the horizontal peaking factor ~~(CX)~~ and/or vertical peaking factor ~~(CY)~~ in dependence on the level of noise in order to reduce an enhancement of noise.

10. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 9, wherein the determining ~~(NLD)~~ of the level of noise ~~comprises~~ includes estimating ~~(NLD)~~ a standard deviation of the noise.

11. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 3, wherein the input image signal ~~(L(m,n))~~ represents an image formed by a matrix of pixels ~~(PI)~~, a position of a pixel ~~(PI)~~ in the matrix being defined by indices m,n wherein the index n indicates a horizontal position and the index m indicates a vertical position, and wherein the horizontal high-pass filtering ~~(HHP) comprises~~ includes Laplacian filtering defined by Zx(m,n)=2L(m,n)-L(m,n-1)-L(m,n+1), and wherein the horizontal band-pass filtering ~~(HBP) comprises~~ includes filtering defined by Dx(m,n)=L(m,n+1)-L(m,n-1), and wherein L(m,n) is related to the luminance of a pixel ~~(PI)~~ at position m,n, L(m,n-1) is related to the luminance of a pixel ~~(PI)~~ at position m,n-1, and L(m,n+1) is related to the luminance of a pixel ~~(PI)~~ at position m,n+1.

12. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 5, wherein the input image signal ~~(L(m,n))~~ represents an image being formed by a matrix of pixels ~~(PI)~~, a position of a pixel ~~(PI)~~ in the matrix being defined by indices m,n wherein the index n indicates a horizontal position and the index m indicates a vertical position, and wherein the vertical high-pass filter ~~(VHP)~~ ~~comprises~~ includes a Laplacian filter defined by Zy(m,n)=2L(m,n)-L(m-1,n)-L(m+1,n), wherein the vertical band-pass filter ~~(VBP)~~ is a filter Dy(m,n)=L(m+1,n)-L(m-1,n), and wherein L(m,n) is related to the luminance of a pixel ~~(PI)~~ at position m,n, L(m-1,n) is related to the luminance of a pixel ~~(PI)~~ at position m-1,n, and L(m+1,n) is related to the luminance of a pixel ~~(PI)~~ at position m+1,n.

13. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 10, wherein the estimating ~~(NLD)~~ of the standard deviation ~~comprises~~ includes determining for each pixel ~~(PI) for~~ of a 3 by 3 pixels window ~~(W)~~:

$$ro(m,n)=1/8 \sum_{i=-1}^{1} \sum_{j=-1}^{1} \left| L(m+i,n+j)-vgl(m,n) \right|$$

wherein vgl(m,n) is an approximation of an average value of the luminance values of the pixels ~~(PI)~~ in the 3 by 3 pixels window ~~(W)~~.

14. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 13, wherein the average value is determined by

vgl(m,n)=L(m,n)**W1,

wherein ** denotes a convolution, and W1 is a convolution mask indicating a weighting factor for each of the pixels ~~(PI)~~ in the 3 by 3 pixel window ~~(W)~~.

15. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 14, wherein for each pixel ~~(PI)~~ a histogram ~~(H)~~ is calculated with the following expression:

h(k)= |{(m,n)| k-1/2<=ro(m,n)<k+1/2}| if k=1, 2, …,kmax, or
2|{(m,n)|0<= ro(m,n)<1/2}| if k=0,

wherein |{…}| denotes the number of elements of the set {…}, and wherein an estimated value for a standard deviation of the noise level is the value k=M corresponding to the highest value in the histogram ~~(H)~~, and wherein the horizontal peaking factor ~~(CX)~~ and the vertical peaking factor ~~(CY)~~ depend on ~~said~~ the estimated value.

16. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 1, wherein:

the detecting ~~(HHP; VHP)~~ of the first subset of edges ~~comprises~~ includes high-pass filtering ~~(HHP; VHP)~~ the input image signal ~~(L(m,n))~~ to obtain a first high-pass filtered signal ~~(ZX; ZY)~~,

the detecting ~~(HBP; VBP)~~ of the second subset of edges ~~comprises~~ includes high-pass filtering ~~(HBP; VBP)~~ the input image signal ~~(L(m,n))~~ to obtain a second high-pass filtered signal ~~(DX; DY)~~,

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY)~~ by using a predetermined two-dimensional enhancement function ~~(HEF; VEF)~~ being adapted for allocating values for the peaking factor ~~(CX; CY)~~ to combinations of values of the first high-pass filtered signal ~~(ZX; ZY)~~ and the second high-pass filtered signal ~~(DX; DY)~~, and

the multiplying being adapted for multiplying ~~(MX; MY)~~ the first high-pass filtered signal ~~(ZX; ZY)~~ with the peaking factor ~~(CX; CY)~~.

17. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 16, wherein:

the first high-pass filtering ~~(HHP; VHP) comprises~~ includes horizontal high-pass filtering ~~(HHP)~~ a horizontal component of the input image signal ~~(L(m,n))~~ to obtain a first horizontal high-pass filtered signal ~~(ZX)~~,

the second high-pass filtering ~~(HBP; VBP) comprises~~ includes horizontal high-pass filtering ~~(HBP)~~ the horizontal component of the input image signal ~~(L(m,n))~~ to obtain a second horizontal band-pass filtered signal ~~(DX)~~, and

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY) comprises~~ includes using a predetermined two-dimensional horizontal enhancement function ~~(HEF)~~ for allocating values for a horizontal peaking factor ~~(CX)~~ to combinations of values of the first horizontal high-pass filtered signal ~~(ZX)~~ and the second horizontal high-pass filtered signal ~~(DX)~~.

18. (Currently amended) ~~A method of sharpness enhancement as claimed in~~ The method of claim 17, wherein the method ~~further comprises~~ includes

first vertical high-pass filtering ~~(VHP)~~ a vertical component of the input image signal ~~(L(m,n))~~ to obtain a first vertical high-pass filtered signal ~~(ZY)~~,

second vertical high-pass filtering ~~(VBP)~~ the vertical component of the input image signal ~~(L(m,n))~~ to obtain a second vertical band-pass filtered signal ~~(DY)~~,

the determining ~~(HE; VE)~~ of the peaking factor ~~(CX; CY) comprises~~ includes using a predetermined two-dimensional vertical enhancement function ~~(VEF)~~ for allocating values for a vertical peaking factor ~~(CY)~~ to combinations of values of the first vertical high-pass filtered signal ~~(ZY)~~ and the second vertical high-pass filtered signal ~~(DY)~~.

19. (Currently amended) ~~A sharpness enhancement circuit~~ An apparatus comprising

a first edge detector ~~(HHP; VHP) for detecting~~ that is configured to detect, in a first spatial direction, a first subset of edges in the input signal ~~(L(m,n))~~ to obtain a first detector signal ~~(ZX; ZY)~~,

a second edge detector ~~(HBP; VBP) for detecting~~ that is configured to detect, in the first spatial direction, a second subset of edges in the input signal ~~(L(m,n))~~ to obtain a second detector signal ~~(DX; DY), said~~ the second subset being different from the first subset,

~~a means (HE; VE) for determining~~ an enhancement determinator that is configured to determine a peaking factor ~~(CX; CY)~~ by using a predetermined two-dimensional enhancement function ~~(HEF; VEF)~~ allocating values for the peaking ~~(CX; CY)~~ factor to combinations of values of the first detector signal ~~(ZX; ZY)~~ and the second detector signal ~~(DX; DY)~~, and

a multiplier ~~(MX; MY) for multiplying~~ that is configured to multiply the first detector signal ~~(ZX; ZY)~~ with the peaking factor ~~(CX; CY)~~ to obtain a peaked input signal ~~(DEX; DEY)~~.

20. (Currently amended) ~~A display apparatus comprising~~ The apparatus of claim 19, including a matrix display ~~(DI) and a sharpness enhancement circuit (SE) as claimed in claim 19~~.